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Mapping Deliberative Systems with Big Data: The Case of the Scottish Independence Referendum

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Abstract

Deliberative systems theorists have for some time emphasised the distributed nature of deliberative values; they therefore do not focus exclusively on ‘deliberation’ but on all sorts of communication that advance deliberative democratic values, including everyday political talk in informal settings. However, such talk has been impossible to capture inductively at scale. This article discusses an electronic approach, Structural Topic Modelling, and applies it to a recent case: the Scottish independence debate of 2012–2014. The case provides the first empirical test of the claim that a deliberative system can capture the full ‘pool of perspectives’ on an issue, and shows that citizens can hold each other to deliberative standards even in mass, online discussion. It also shows that, in deliberative terms, the major cleavage in the ‘indyref’ debate was not so much between Yes and No, but between formal and informal venues.

Keywords

deliberative systems, big data, topic modelling, Scotland, independence

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Introduction

For the last decade, some branches of deliberative democratic theory have been shifting away from institutions and norms that are thought to provoke idealised deliberation towards thinking about how complex constellations of institutions, norms and practices realise deliberative values in democratic societies as a whole (Dryzek, 2010; Parkinson and Mansbridge, 2012). However, the challenges of empirical research into ‘deliberative

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systems' thus conceived are considerable (Fleuß et al., 2018; Owen and Smith, 2015). Systemic perspectives emphasise the distributed nature of deliberative values; they therefore do not focus exclusively on 'deliberation' but on all sorts of communication and practices that advance deliberative democratic values, including the importance of everyday political talk in informal settings (Mansbridge, 1999; Neblo, 2015); organised, coordinated confrontation, contestation and performance (e.g. Curato et al., 2019); as well as the formal deliberation of legislatures and the institutions of 'middle democracy' (Gutmann and Thompson, 1996). But researching such complexity at the scale of mass democracy always entails a classic empirical trade-off: we can either focus on the micro-dynamics of everyday communication in particular sites but then lose sight of overall patterns, or we can stand back and examine patterns of communication at the large, national and transnational scale, but lose sight of detail we think important.

There are several ways of handling this trade-off in the deliberative literature. The dominant strategy is to narrow the range of sites and institutions under study, usually by focusing on the connections between one or more small-scale, citizen-centred forums and a wider or more formal democratic process (e.g. Boswell et al., 2016; Hendriks, 2016), as in the growing literature on constitutional deliberative democracy (Levy et al., 2018; Suiter and Reuchamps, 2016). Such work embraces more communicative detail but often stays focused on deliberation, the noun, rather than the distributed, adjectival, deliberative quality that systems theory suggests is so important (Parkinson, 2018), and is only systemic in a limited way, focused on a small number of connected sites, often just two or three.¹ Another, surprisingly rare, approach is to look at institutional networks and relationships and draw inferences about communicative flows based on those linkages (e.g. Cinalli and O'Flynn, 2014), and while such studies approach a more systemic view of democratic complexity, examining dozens of sites, they do not study communication directly.

An important alternative approach is taken by Stevenson and Dryzek (2012, 2014), who take a macro view not so much of institutions but of communication, focusing on discourses both as coordinators of and resources wielded by people in collective action: in their case, counter-hegemonic battles over transnational climate governance. Stevenson and Dryzek (2014) start with discourses conceived in a particularly macro way – few in number and persistent over decades – while they 'reconstruct' such discourses using methods 'broadly consistent with' Fairclough's (2003) critical discourse analysis (CDA), techniques which still require a great deal of human, deductive judgement to create, sample and make sense of the body of texts (Baker et al., 2008). While the idea of 'discourse' is macro, the cases they work on are more middle range, focusing on activist and non-governmental organisation (NGO)-led engagement in governance extracted from observation and samples of text – the sampling is not discussed – of four 'organized spaces' for civil society discussion of climate change response leading up to and including the 2009 Copenhagen climate summit. In short, this approach is significantly more systemic compared with the dominant strategy, but it examines a small number of venues, does not capture everyday informal talk and uses methods that are less inductive than might appear.

Of course, no method can be fully inductive, no method can capture every element we want to study and every result needs interpretation. Rather than rejecting what has gone before, this article suggests a complementary approach that provides more radically inductive grounding for large-scale, complex, systemic analysis. It examines large-scale communicative patterns, but extracts those patterns more directly from everyday textual data, using recent developments in electronic social science. In particular, it applies a tool

called Structural Topic Modelling (STM) to understand the thematic structure of online everyday talk in one deliberative system over 27 months: the Scottish independence debate of 2012–2014. It works with a database of a million interactions in online forums, blogs, social media and comment sections, as well as documents from campaigning groups, traditional news media, political parties, think tanks and other sources in both Westminster and Holyrood over the same period. By revealing thematic patterns in a large database of everyday communication, the analysis reveals the extent to which issues that were being raised and discussed in the informal, online public sphere were the same as, or closely connected with, issues that were being represented in the formal public sphere, whether the same issues were being discussed as much in ‘yes’ leaning forums as ‘no’ leaning ones and how those patterns evolved in the two years prior to and immediately after the vote in September 2014. As such, it provides an entirely novel test of one of the necessary conditions for a mass democratic system to be considered ‘deliberative’: that mass democracy can be inclusive of, and listen to, the ‘pool of perspectives’ on an issue (Bohman, 2012), over an extended period of time.

The case findings are as follows: (1) the Yes and No sides were talking about the same issues with each other to a remarkable extent, even while disagreeing about whether independence was a good means to achieve those ends; (2) there was an important thematic cleavage between formal and informal sites, particularly on economic matters but not exclusively so, with those in formal sites much less likely to pick up the themes being discussed in informal sites than the other way around; and (3) the ‘meta-conversation’ – conversation about the rules of debate – was an enormously salient feature of the independence debate. The findings show that ordinary people, given a major constitutional decision to make, hold each other to deliberative norms *in mass public debate* and not just in the special conditions of a deliberative mini-public or activist forum; that, while far from perfect, citizens can engage seriously with each other, including the full pool of perspectives, making it present at the moment of decision; and that the problems of listening, in some particular ways, were more a feature of elite, formal discussion than mass, informal talk.

Along the way, the article also shows that deliberative systems research can be *both* radically inductive *and* genuinely large scale. The need for interpretation does not go away, but using particular electronic methods allows us to reveal macro-level patterns that are grounded in the everyday talk of citizens to an extent that has not been possible so far.

Approach and Research Questions: The Pool of Perspectives

Deliberative systems approaches consider the classic deliberative democratic goods of inclusive, decisive public reasoning not to be features of any one ideal institutional design but to be dispersed goods. No institution can be maximally inclusive, public, reasonable and decisive at once, but a variety of institutions and social practices may combine to produce those goods on an issue, over time and place, with differently situated actors (Dryzek, 2009; Gallent and Wong, 2009). While it is sometimes presented as a recent development, systems thinking has much older roots: indeed, deliberative theory partly began as an attempt to provide a better descriptive theory of democratic societies as a whole than vote-aggregation accounts (Chambers, 2003; Floridia, 2018). What systems approaches share with more ‘micro-deliberative’ (Hendriks, 2006) approaches is the

thought that political legitimacy rests on public reasoning, the defence of proposals for collective action in public, rather than the aggregation of private preferences. What distinguishes them from micro-approaches is that they treat the ‘forum’ as a metaphor for large-scale democratic processes (Elster, 1986) rather than as a blueprint for small-scale institutional design, although, as noted in the ‘Introduction’ section, there is a body of work that applies small-scale concepts and tools to larger scale processes.

Systems theorists generally follow Habermas (1996) in focusing on the ways that the formal institutions of democracy capture – or fail to capture – claims on public attention, resources and decision making that emerge from the vast amount of informal communication in the wider public sphere about collective life. For scholars like Mansbridge (1999), this means paying attention to the ‘everyday talk’ of democracies and not just formal argumentation; indeed, for Bohman (2012), everyday talk is the lifeblood of democracy, the ‘pool of perspectives’ in which formal deliberation must be anchored. Dryzek (2010) turns this around, arguing that the purpose of citizen-led communication in the informal public sphere is not merely to feed the state, as it were, but to engage and act critically with fellow citizens and challenge the state where necessary. Either way, communication in the informal public sphere is a crucial element of a deliberative system, an element of the ‘empowered inclusion’ function on which collective will formation and legitimate decision making depend (Bächtiger and Parkinson, 2019; Warren, 2017).

Our aim in this article, therefore, is not to ask whether citizens ‘deliberated’ in any strict sense. Rather, we ask four analytically prior questions about the state of the pool of perspectives and its uptake. Those questions are as follows:

1. What was the content of the pool of perspectives?
2. To what degree did communication in formal sites pick up on the claims emerging from the informal, and vice versa?
3. To what extent were citizens engaging with the claims that emerged from committed Yes and No perspectives?
4. And, following Bächtiger and Parkinson’s (2019: 87–88) insistence on representing deliberative systems in dynamic rather than static ways, how did those things vary over time?

As our evidence will show, a significant aspect of the Scottish independence debate was the degree to which citizens held each other to account for upholding norms of democratic debate: giving reasons and evidence, calling out abuse and so on. We call this the meta-conversation: discussion and defence of the rules of discussion. An alternative label is ‘meta-deliberation’ (Stevenson and Dryzek, 2014), which is used in both broadly descriptive and more narrowly normative senses in the literature, the former meaning simply ‘to discuss what we discuss’ while the latter is ‘minimizing distortions and exclusions that otherwise undermine the rationality of deliberation’ (Holdo, 2020: 107–108). Our findings are more in the spirit of first sense and less the second: by looking at the pool of perspectives, we examine some features of a well-functioning deliberative system that are not necessarily *deliberation* per se, and we use the ‘meta-conversation’ label to keep that distinction clear.

To repeat, a broad – and deep, and clear (Parkinson, 2012) – pool of perspectives is not all there is to deliberative quality at the large scale. The degree to which issues are engaged with across venues and ‘sides’ of a debate is not a sufficient condition for a mass democratic process to have a deliberative quality. But it is a necessary condition, and this article offers a new way of getting some empirical purchase on it.

Case Overview

The Scottish independence referendum of 2014² – the ‘indyref’, as the most widely used hashtag called it – makes an excellent case for examining the degree to which conversations in one corner of the public sphere are taken up, shared and engaged with elsewhere, in informal and formal venues. Independence had risen and fallen in salience since the late 1960s (Devine, 2008; Whatley, 2014), but gained new impetus with the creation of the Scottish Parliament and devolved government in 1999. In 2007, the Scottish National Party (SNP) formed a minority government, and while that is generally attributed to their ‘standing up for Scotland’ and ‘good government,’ stances and not the prospect of independence per se (Bennie and McAngus, 2020), they nonetheless soon issued a white paper called *Choosing Scotland’s Future: A National Conversation* (Scottish Government, 2007), which set out a roadmap for an independence referendum. This momentum only increased when the SNP won an overall majority in 2012.

According to interviews, discussed in the next section, and anecdotal evidence, there was relatively little engagement in this ‘national conversation’ until the Edinburgh Agreement of 15 October 2012 in which the UK and Scottish governments agreed the terms of a referendum. Even then the conversation began as a rather elite affair, with all the other major political parties in Scotland ranged against independence, all the Scottish daily newspapers against, and UK media coverage focusing on broadly economic issues and the leadership of the two formal campaign organisations, Yes Scotland and Better Together,³ especially in the early phases (Law, 2014). Nonetheless, a vibrant grassroots conversation did start, partly to plug an ‘information vacuum’ (Edinburgh workshop, October 2015). It was encouraged by dozens of local-level Yes groups, reformist NGOs like the Electoral Reform Society and Common Weal, the Radical Independence Campaign (RIC, a varied coalition including Greens and Socialists), a network of artists and writers called the National Collective and, later, a coalition called Women for Independence (WFI), which initially formed online and spread nationwide (McAngus and Rummery, 2018; interview, WFI activist, Inverness). The result was, as one Scottish government official put it, ‘conversations at bus stops about fiscal policy’, an intensity of conversation that they wanted to ‘bottle’ for use on other issues.

The conversation was not just in market squares, pubs and kitchen tables; it was very active online. Facebook groups sprouted, some affiliated with the formal campaign groups but often not; new media like *Bella Caledonia* and *Wings over Scotland* were set up to counter what some saw as the conservative narratives of the established media (Hassan, 2014); online forums like the parenting network Mumsnet and entertainment forum Digital Spy, that otherwise had nothing to do with politics – but are more likely to allow people to debate across boundaries than expressly political sites (Minozzi et al., 2020; Wojcieszak and Mutz, 2009) – featured threads that in many cases started before the Edinburgh agreement and never stopped, not even after the vote.⁴ WFI itself began online and only later moved into face-to-face engagement. That is to say nothing of the digital engagement strategies of the Scottish government, other parties, think tanks, academics and interest groups.

But was this a genuinely inclusive conversation? Yes supporters – especially ‘cybernats’, a pejorative term for online independence activists – were accused of abusing, bullying and physically attacking supporters of the status quo, while media reports painted the nationalist position as one of intolerance. Even important academic discussions repeat this view: the Scottish political science literature, for instance, tends to take a traditional,

top-down view of the referendum,⁵ and while online engagement is referred to, studies either focus on one of the 'big two' of social media, Facebook and Twitter (e.g. Quinlan et al., 2015), and usually just the accounts of the two formal campaigning organisations rather than the grassroots activity; or simply dismiss it, such as Mullen (2016: 22) who writes that 'in cyberspace in particular insults were traded, national epithets bandied about, and patriotism and loyalties questioned'.

Our results will show that there was very much more happening online than the trading of insults, results which we validated through a triangulation process described in the next section. But the idea that online and offline worlds are entirely different, with little overlap or with communication between them flowing only in one direction from the physical world to online sites, is no longer supported in the literature. They are deeply entangled, with communication flowing in multiple directions: the affordances of online engagement have extended our repertoires of action, rather than constituting an entirely different mode (Gibson and Cantijoch, 2013), while, contrary to technological determinist assumptions, the *procedures* of particular sites and the *context* in which they work matter much more than whether they are online or offline (Wojcieszak and Mutz, 2009; Wright and Street, 2007: 860).

So, the Scottish case is one of a highly salient, widely discussed constitutional change, about to go to a mass popular vote; with extensive grassroots engagement, a great deal of which was online, but which featured claims that the formal and informal spaces were having different conversations, and Yes and No trading insults. We had good data access and new tools becoming available to analyse it, to which we now turn.

Methods⁶

The empirical research began with a mixture of interviews, a workshop and secondary research in order (1) to provide a baseline understanding of the issues that arose in the campaign that we could use for later data validation, (2) to understand participant's own interpretations of events and (3) to understand what participants' own evaluative standards were – what would a 'successful national conversation' have looked like? The archival work was conducted in late 2015 in the Scottish National Library and at Stirling University, both of which maintain collections of material relating to the referendum campaign. A workshop was held at the Academy of Government at Edinburgh University in October 2015 with a group of 15 journalists, academics, senior officers from NGOs and officials from the Scottish Government who had communication and process management responsibilities during the campaign. The workshop was supplemented by 11 unstructured interviews with members of local, grassroots movements, in the main cities and in regional areas, including the Highlands and Islands, as well as two Members of the Scottish Parliament (MSPs) to better represent the No perspective.

We then created a database of online communication on independence issues over 27 months, from 18 September 2012 (2 years before the referendum) to 18 December 2014 (3 months afterwards). This period captures two critical junctures: the Edinburgh Agreement of October 2012 which set the parameters for legislation allowing the referendum to go ahead, and the report of the Smith Commission (2014), set up to recommend further devolution of powers to Scotland in line with 'The Vow' made by the leaders of the three main UK parties 3 days prior to the vote on 18 September 2014.⁷

The database was generated by 'scraping'⁸ publicly available online sources with UK domains using the keywords 'independen*', 'indy' and 'indyref'. The sources included

expressly Yes and No views, formal and informal sources and a range of modes of engagement from short comments to long discussion threads in online forums. The major sources were as follows:

1. The public pages of Yes and No campaigning groups on Facebook, including local branches of the decentralised Yes campaign, as well as independent groups like WFI, United against Separation and Reasons for Independence, and thousands of non-affiliated posts.
2. Public independence threads on Reddit, Mumsnet and Digital Spy.
3. The two newspapers with accessible archives, the *Daily Record* and *The Herald Scotland*, the Sunday edition of the latter being the only newspaper favouring an independent Scotland.
4. The multi-authored *Bella Caledonia* blog and *Wings over Scotland*, both of which became important alternative and Yes-leaning media sites, and *Lily of Saint Leonards* and *Chokka's blog* on the 'No' side.⁹
5. The web archives of the Scottish Government and Parliament, and Scotland-related sites in Westminster.
6. Reports, speeches, press releases, analyses and position papers published online by think tanks, business organisations, unions, political parties, interest groups and academics.

The database was cleaned to produce a working sample that eliminated a number of known sources of error (Lucas et al., 2017). We limited the Facebook data to 'interactions', which we defined as a single post with at least one response, so that its sheer size did not swamp the contributions of smaller sources, including the Scottish Government itself. In the end, after a validation process described shortly, the right balance between Facebook and other sources was achieved with a sample of 43,354 unique contributions and interactions, and it is this sample that is the basis of the analysis in the next section.

The sources were grouped into self-declared 'Yes' and 'No' sites, with a neutral category covering everyone else, and into formal and informal sources. The formal/informal dividing line is the degree to which the content of a site is produced largely by citizens themselves or not. So, in the 'formal' camp are parliamentary and governmental sources, traditional newspapers, academic and think tank research reports, and the websites of the two official campaigning organisations. The informal group includes the forums, blogs and social media. Of course, this is a fairly crude distinction: for example, the Facebook pages of the formal campaign organisations count as informal while their websites count as formal, largely because of the former's high proportion of comments and questions from the wider public. Similarly, *Bella Caledonia* counts as informal because of its multi-author approach and open comment policy, despite being run in some respects like a formal media outlet.

One caveat to the data is that it was very much easier to get information from Yes sources than No. This could be partly a matter of their differing approaches: the No side largely coalesced under the banner of the Better Together campaign, whereas the Yes side was a much more dispersed, multi-actor affair (cf. Langer et al., 2019). It was also the case that requests for interviews with Yes campaigners were almost always accepted – indeed, they went out of their way to set up interviews for us – while No advocates almost always refused. A common explanation encountered during preliminary research was that No voters refused to engage and discuss issues with Yessers, finding the latter's attempts

to engage a sign of un-British fervour. This might also explain unwillingness to engage with the research team: the topic reeked of an exhausting conflict that would be better forgotten. Mitigating potential Yes bias in the data was another reason for including Mumsnet and Digital Spy: everyday citizens' fears and concerns were expressed more readily in relatively safe spaces of members' forums, much less readily in the relatively 'hot' and expressly political public space of Reddit and Facebook campaign pages (Wojcieszak and Mutz, 2009). We will return to this point later, and show that, when it comes to the topics being discussed, the idea that No-leaning citizens were unengaged is not supported by our data.

When it came to the data analysis, our tool selection was driven by three main considerations: (1) the scale and heterogeneous nature of the data, (2) our desire to stay as inductive as possible to avoid imposing our thematic preconceptions and (3) availability of training, advice and support. The first two considerations meant that we rejected what Grimmer and Stewart (2013: 273–280) call deductive 'categorization' methods, using dictionaries or supervised machine learning, and instead looked at more inductive, automated 'clustering' methods. All three criteria were met by STM, a package of the R statistical computing environment, which applies probability tests for the discovery of topics within a corpus of text.¹⁰ STM sorts words into topics, defined by groups of words that tend to co-occur according to four different probability tests (see the Supplemental Appendix for details).

In general, topic modelling has two major advantages over other techniques of textual analysis: it quickly handles very large corpora, and it does not apply a predetermined coding or selection frame and is thus extremely useful for uncovering 'latent topics', themes that occur in the corpus that are not immediately obvious to human readers. On the downside, it treats documents as 'bags of words' regardless of syntax or context, although it maintains the links between a given topic and the original source documents that are most likely to feature that topic. So, researchers can always 'drill down' to the original source data with its contextual features still in place.

The bag of words feature might normally be seen as a disadvantage when it comes to political analysis that is otherwise so alive to the importance of context (Bächtiger and Parkinson, 2019), but it interacted in an interesting way with the heterogeneity of the database. Topic modelling is typically employed on a corpus containing documents of a single type such as newspaper articles, speech transcripts, reports (see structuraltopic-model.com for numerous applications), presumably on the view that different sources have different norms and affordances, which impact what can and cannot be said in them. However, a bag of words analysis itself reveals interesting differences in the ways that ideas are clustered in different kinds of venue. As we discuss shortly, our results show that the Scottish national conversation divided roughly into the three domains which were more or less entwined with each other: the 'formal' world of newspapers, government, academics and think tanks; the more discursive and long-running exchanges of the online forums; and the short and sharp exchanges of social media. The differences were sometimes a matter of different terminology, certainly, but sometimes revealed different substantive concerns, and these patterns are *revealed* by our approach, not obscured by it.

One non-inductive feature of STM is that researchers need to make a judgement about the number of topics – a 'topic model' – that the software reveals before running the analysis. One approach is to find a model that balances two traits called exclusivity and semantic coherence (Rothschild et al., 2019), but in this case every model produced almost identical trade-offs, so we could not use this method. Instead, we compared topic

correlations. We ran a number of different models from 60 to 100 topics and found that a model with 70 topics produced enough topic correlations to be interesting, not so many to be unmanageable and for the most part disaggregated different meanings of words into different topics. See the Supplemental Appendix for a table summarising the topics, with short example texts to illustrate.

We then validated the model by comparing it with the topics that emerged from an analysis of the raw, informal-only data, and found that none were filtered out. We then checked it against the issues that arose in the preliminary research. We read and ‘open coded’ (Berg, 2001) the interview and workshop transcripts, then cross-checked those codes with notes from our archival work and while a number of issues were present in the model that had not come up in the preliminary work, only one issue was missed from the electronic: land reform. While land reform was a key concern for some pro-independence activists, there was no evidence in our database of it being more widely discussed online. With that one exception, we are therefore confident that the model is a good representation of the topics ‘out there’ in the wider public sphere.

The Meta-Conversation

So, in answer to question 1 (p. 4), what themes did Scots discuss in their national conversation about independence? Figure 1 shows the proportion of each of the 70 topics in the cleaned sample; Figure 2 shows the correlations between numbered topics with the width of the connecting lines indicating the strength of correlations.

The most frequent topic, comprising 7.6% of the sample, is number 12, something we have labelled ‘Hopes & fears 1’. It is a very general topic that focuses on hopes and fears for which side will win, the prospects of changing others’ minds and complaints about fear-mongering. It is closely ($c=0.13$) correlated with, and followed in importance by, very similar topics: 47, which is about persuasion and arguments for self-government, including ideas of self-belief and some more complaints about moaning and fear-mongering; and 68 which is about the SNP and its leaders. It is moderately correlated with topic 4 ($c=0.1$), another very general topic containing allegations and assertions about ‘truth and lies’; strongly correlated with 62 ($c=0.15$), about the quality of debate and discussion; and weakly with 44 ($c=0.09$), which is allegations about national bias, particularly anti-English bias.

These issues were very much more important in the informal sites than the formal ones, as Figure 3 shows. The graph shows the proportions of the topic by formality of the site over time, and it is clear that this ‘hopes and fears’ issue was only taken up in the formal sites from late April 2014, hitting 2.2% of the sample by the time of the vote, whereas this had been a – indeed, the – significant feature of the informal discussion for most of the 2 years prior. A similar pattern can be seen with topic 47, with a wide separation between formal and informal presence throughout the debate, although that decreases slowly in importance over time; in other words, ideas of *persuasion* give way to more strident complaints as the debate progresses.

Hopes & fears 1 is also strongly correlated with discussion of the SNP and its leaders, Alex Salmond and Nicola Sturgeon (topic 68, $c=0.13$), but this topic peaks about a year out from the referendum and gradually decreases in importance from that point onwards, never getting more than about 2% of the attention. It is a slightly more important concern on informal sites than formal (by about half a percent), but shows no significant difference between Yes- and No-leaning sources. But the *British* party leaders, connected with

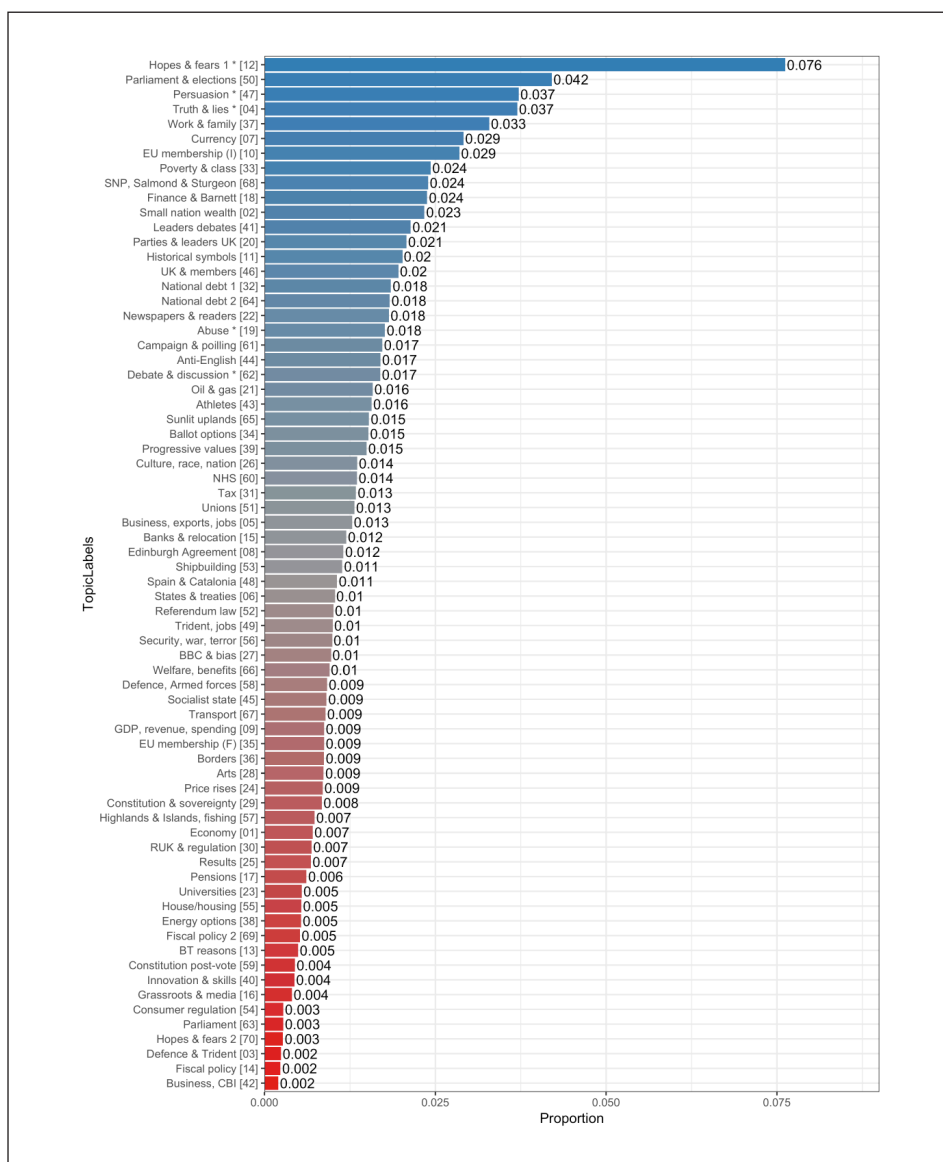


Figure 1. Topics as proportions of the corpus. Figures in square brackets are the software-generated topic numbers; labels are author codes; proportions given as decimals where 0.076 = 7.6%. Meta-conversation topics are marked with an asterisk. Note that topic 55 ‘House/housing’ is the only portmanteau topic – this particular model was unable to distinguish between the ‘House’ of Lords or Commons and discussions about ‘housing’.

the formal Better Together campaign (topic 20), are a much more significant concern to the formal sources, as Figure 4 shows. Between 4% and 5% of the formal coverage was specifically on this topic, leaping to nearly 10% at the time of the vote. It climbed still higher with ‘The Vow’ and in the aftermath, as the Smith Commission was set up to address promises of further devolution.

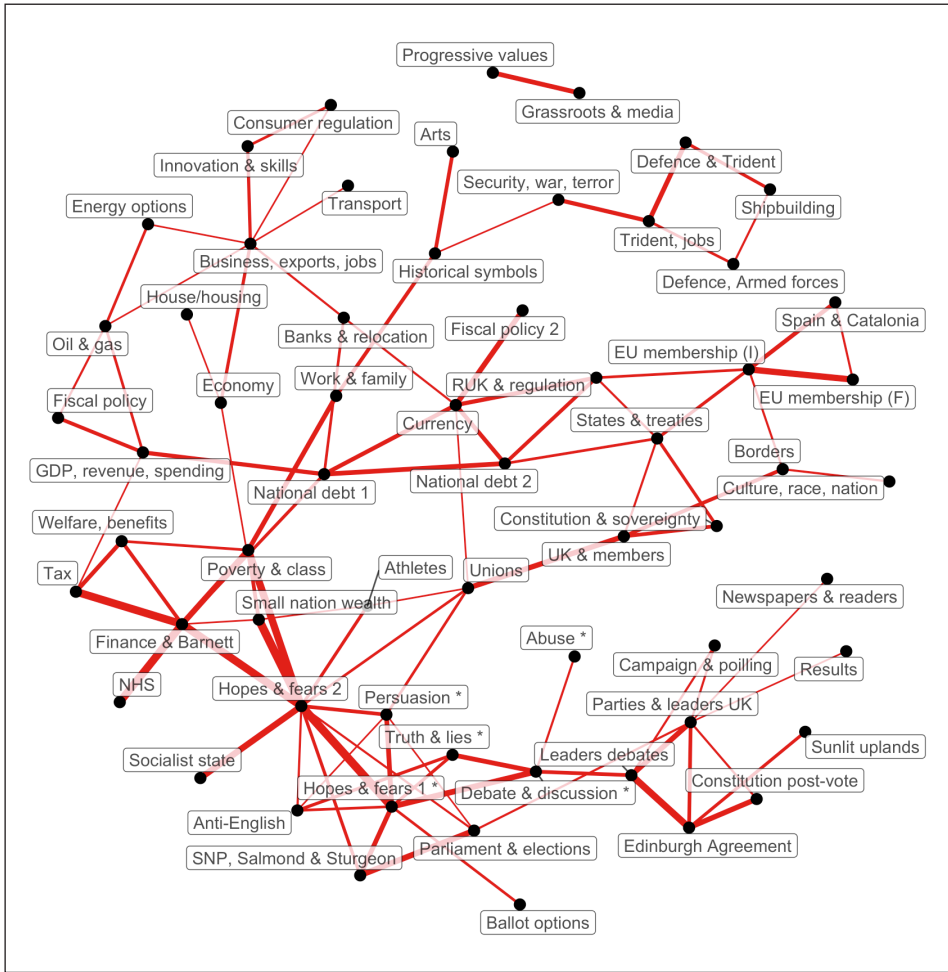


Figure 2. Topic correlations in the corpus. The width of the line indicates whether the correlations are strong, $c > 0.15$; moderate, $0.1 < c < 0.15$; and weak, $0.05 < c < 0.1$. Any correlation below 0.05 is excluded. A full table of topic correlations is available from the project blog at <https://natconvblog.wordpress.com>.

In short, the dominant topics of the debate are meta-conversation topics. This is important from our theoretical standpoint. If one were to take the view that deliberative democracy is about testing proposals for collective action, then one might discount the meta-conversation data as mere noise, with little substantive content, and would be tempted to eliminate it from the analysis. But this and closely related topics took up around 20% of the overall indyref debate, and if we look at it through a more expansive, systemic theoretical lens, then it makes much more sense. Participants are not just trying to persuade each other to take one or other substantive position; they are trying to persuade each to listen, to cite evidence and calling out failures. They are holding each other to deliberative standards and that is a significant finding.

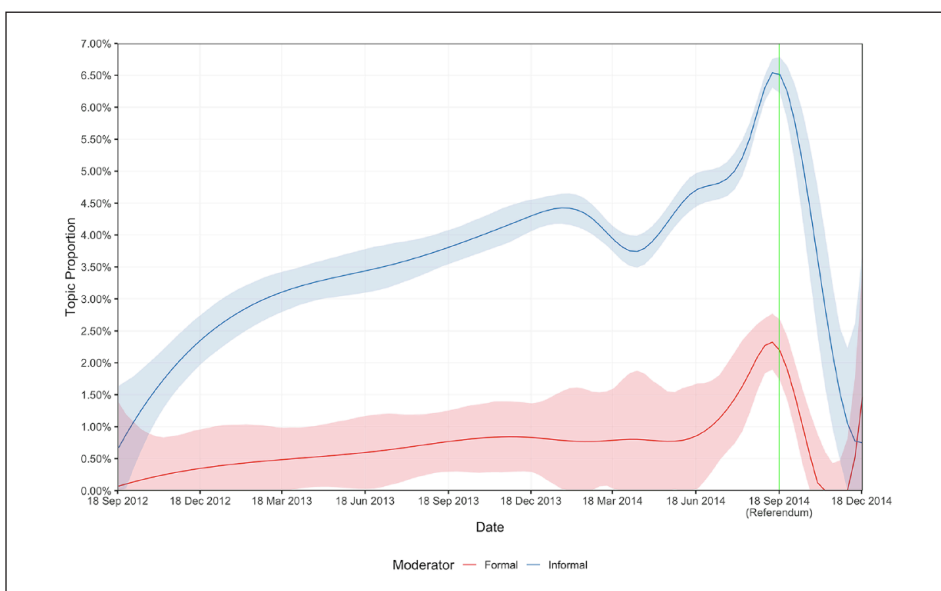


Figure 3. Topic 12, 'Hopes & Fears I', over time by site formality. Note that the solid lines represent the mean topic proportions; the shaded area represents the 0.95 confidence interval. That confidence interval is always narrower for the informal sites because of the much larger number of documents that are coded informal. If the shaded areas of a comparison graph overlap, that means we cannot draw statistically significant conclusions about the differences between the two variables ('moderators' in R-speak); if there is clear space between them, then we can.

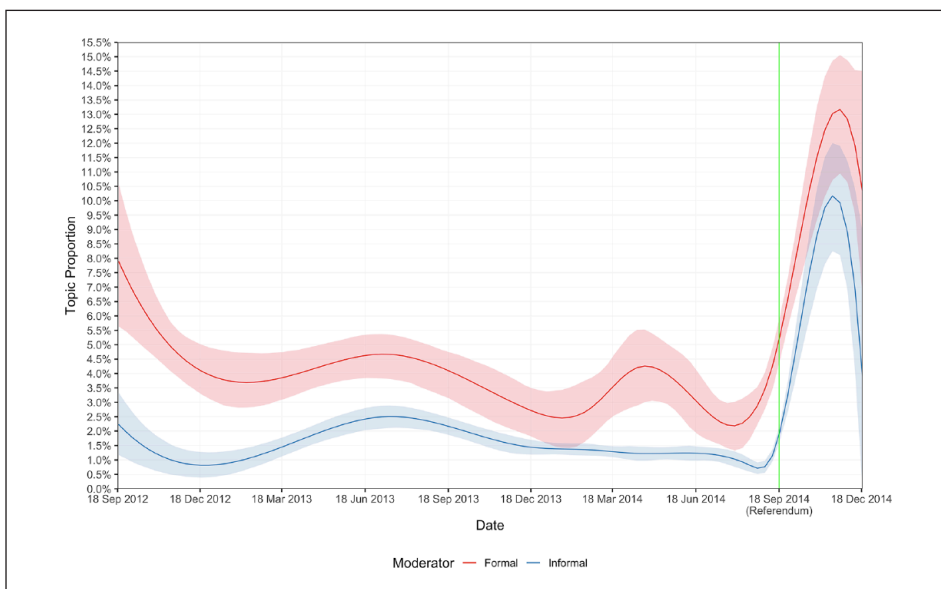


Figure 4. Topic 20, Parties & leaders UK, over time by site formality.

A Divided Yes and No?

Another striking feature is the degree to which Yes- and No-leaning sources discuss the same issues. There are few topics that are associated clearly with one side of the debate and not the other: of the 70 topics, just three are clearly and another three slightly No-leaning; while four are clearly and one slightly Yes-leaning. The Yes-leaning sites feature more discussion of democracy and progressive politics (topic 39), and spend more time discussing newspapers and blog readership (topic 22), but that is to be expected given the agendas of many of the participants in these discussions, including groups like RIC, and because of the widespread feeling in Yes campaigning circles that the campaign needed its own media, its own methods of engagement and could not rely on mainstream media to carry their messages. Similarly, No-leaning sites were very much more likely to feature discussion about the SNP and its leaders than Yes sites. There are some minor differences on the arts, the economy and national debt, but they are very small indeed, and the remaining 59 topics show no particular association with either side. Despite a tendency in interviews for Yes campaigners to paint their opponents as naysayers without substantive commitments, our evidence is that they were not just talking about the same issues, they were talking *with each other* about the same issues, with nationalists engaging in debate on 'No' sites and unionists engaging on 'Yes' sites, and both perspectives well represented in the forums.

This is an encouraging finding on our second question (p. 4): it is an important condition of a well-functioning deliberative system that people are talking with each other about the same issues. This resonates with comments made in the Edinburgh workshop that the indyref debate focused on what Scots valued, what was distinctive about Scottish ways of doing things. On those issues, Scots often agreed. What they disagreed about, for the most part, was whether independence was the best means to achieve those ends.

But while Yes-leaning and No-leaning sites may have featured broadly the same conversation, there are some significant gaps between informal and formal sites. This is sometimes a matter of the language appropriate to different settings, which thus appears as different topics in the STM analysis. Examples include EU membership (topics 10 and 35) and the issue of the vexed relationship between Spain and Catalonia and how that might affect Scotland's EU membership (topic 48); while only the British government and some business interest groups talked about 'Innovation & skills' (topic 40), a bureaucratic way of discussing what to everyone else was jobs, fairness, opportunity and education (see Figure 5). Incidentally, topic 40 is connected with a near-isolate, number 23, 'universities', which is largely made up of academic studies of the likely impact of independence, together with some limited discussion of the role of universities themselves. Again, it was the *language* in which academia spoke – and the Confederation of British Industry (topic 42), by the way – that isolated them from the rest of the discussion and not necessarily the substantive concerns. Academics seem to have touched on a wide range of issues, but not in terms that others used.

Another curious example is topic 13, labelled 'BT reasons', which is largely made up of 30 reasons to stay in the United Kingdom given in answer to posts and questions on the Better Together campaign's Facebook page. The Better Together Facebook team seems to have deployed a single set of responses to every question posed, starting in the first 100 days of the database and then again about a year later. What is striking is that these talking points do not connect with *any* other theme, that is, they mention some of the same issues but in language that combines short, sharp ideas in entirely idiosyncratic ways. As

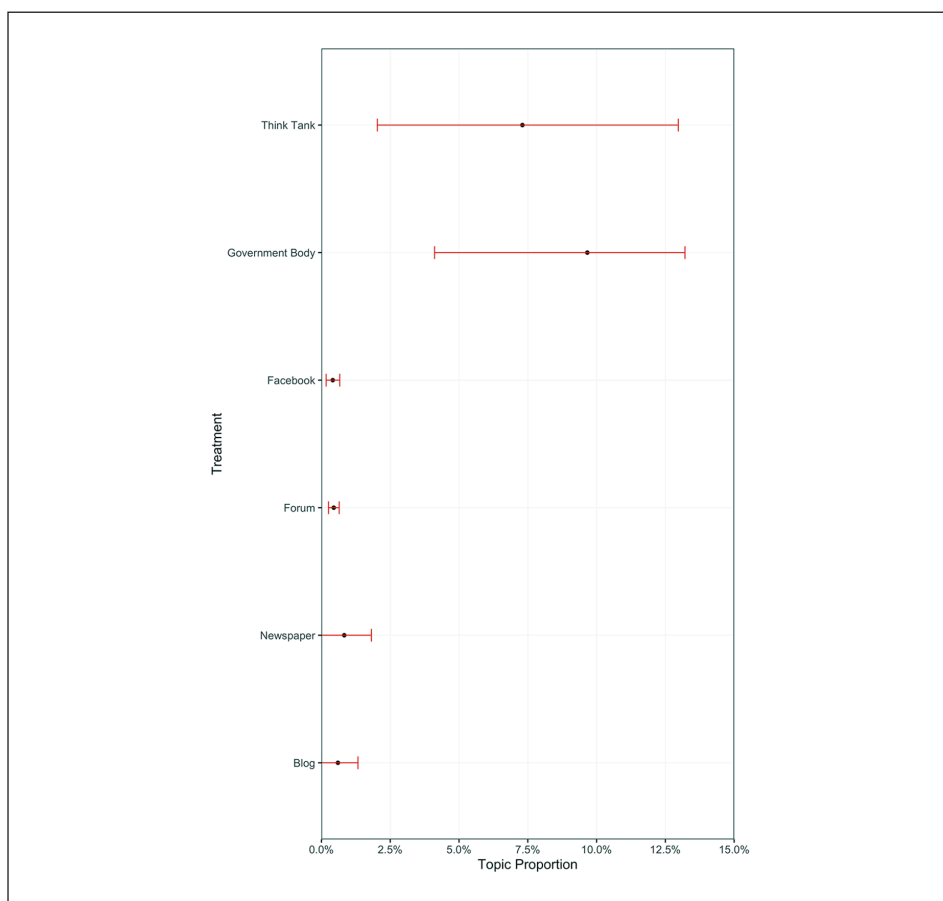


Figure 5. Topic 40, Innovation & skills, point estimate: the likely presence of the topic in the corpus by source type.

indicated by the blue line in Figure 6, some people pick up these talking points and run with them in discussions on Mumsnet and Digital Spy in the first months of the campaign, but this is much less the case from July 2013 onwards. In short, while people on identifiable-Yes and No sites may have largely been talking about the same issues, the Better Together campaign itself, especially its social media team, was pushing its talking points, come hell or high water, with little direct impact on the language of ordinary citizens.

Two Worlds of Economics

It is not the case, however, that the formal/informal divide merely reflects the different language appropriate to different settings. For example, there is a large disparity in topics 20 and 41 which concern parties, leaders and televised debates: Figure 7 shows the formal/informal gap for topic 41, which focuses on the debates. This particular bias may not be surprising given that the actions of significant people are part of the definition of what counts as 'news' (Street, 2001).

More striking is the formal/informal divide on economic matters, appearing as two distinct clusters in Figure 2. One major cluster has two nodes, the first being topic 18

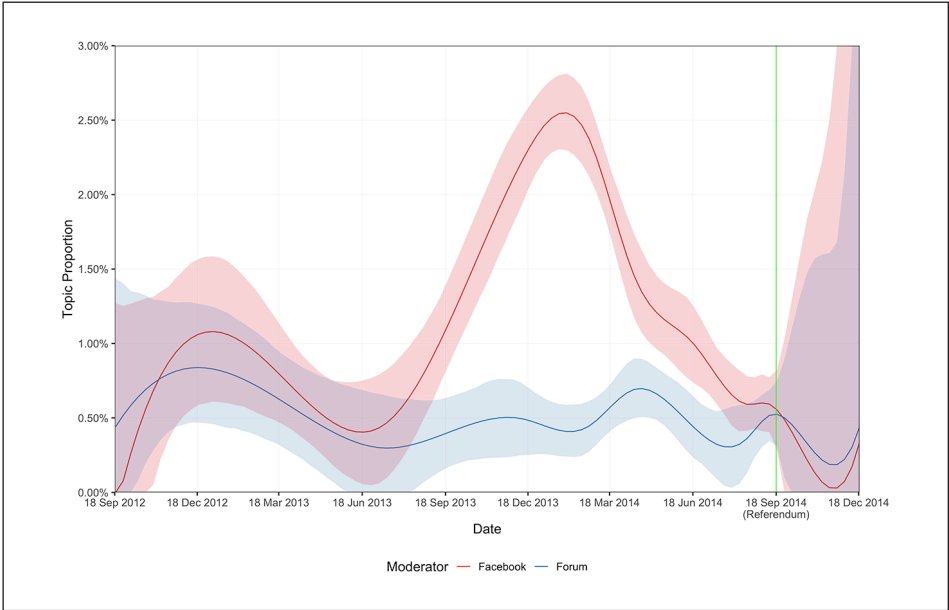


Figure 6. Topic 13, BT reasons, Facebook and forum comparison. Most ‘sub-sources’ like particular media outlets contain too little data for meaningful comparison at this level. The fact that the Better Together team largely ceased operating the day after the referendum led to a significant fall in activity, which in turn explains the enormous confidence intervals after the vote.

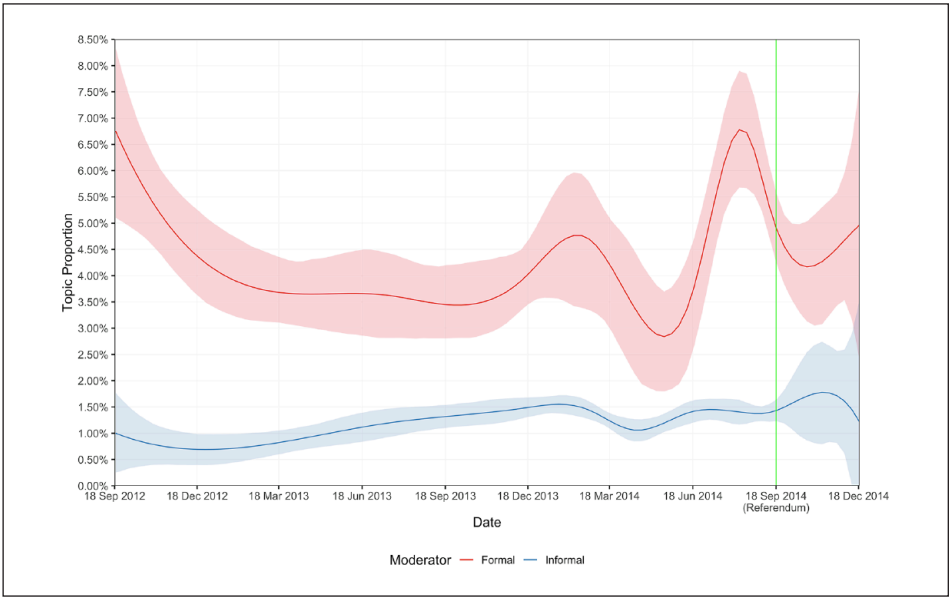


Figure 7. Topic 41, Leaders debates, over time by source formality.

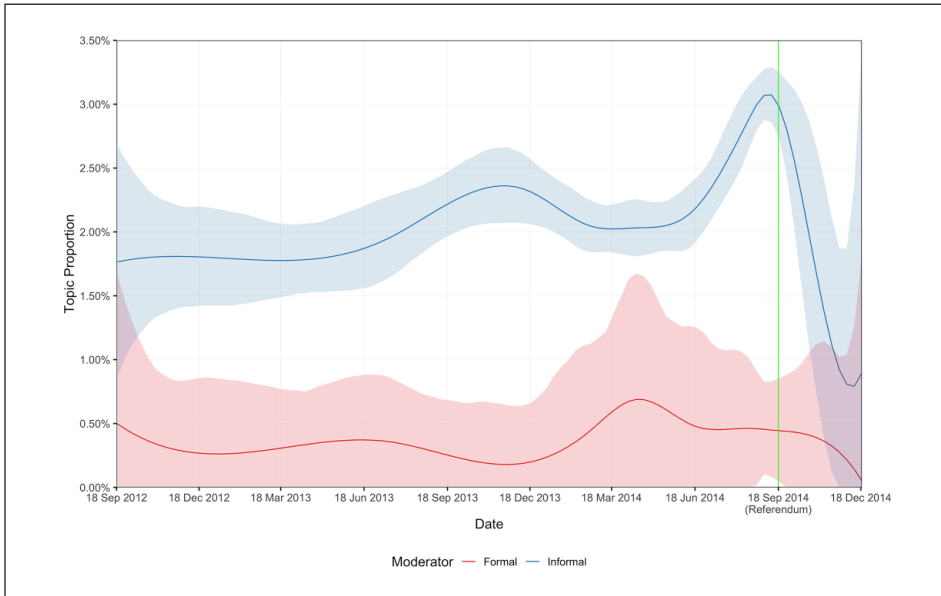


Figure 8. Topic 33, Poverty, austerity and class, by formality over time.

which is about public finances and the affordability of public services, including the ‘Barnett formula’ which determines the amount of money given to the devolved governments of Scotland, Wales and Northern Ireland by the UK Treasury. It is primarily an informal topic, and one of equal and steadily rising importance to both Yes and No. Topic 18 is strongly connected with topics 31, 33, 60 and 66 and less strongly with several others. The first (topic 31) is about taxes and revenues, particularly SNP proposals to make the tax system more ‘fair’ – that is, more redistributive – and is equally discussed between Yes and No, formal and informal sites. Topic 33 is about poverty, austerity and social class, and while it gains steadily in importance for both Yes- and No-leaning sites, it is very much an informal concern and not formal, as Figure 8 shows. Number 60 concerns the National Health Service, particularly cuts to funding and fears of privatisation: it matters equally to Yes and No, formal and informal, and spikes in the final three months of the debate. Topic 66 is about welfare, including housing, the job-seekers’ allowance, controversies of sickness and disability pensions, and ‘fit for work’ assessments.

This group around topic 18 is strongly connected, directly and via topic 33, with another node, topic 70. The latter is not a particularly prominent topic but we have labelled it ‘Hopes and Fears 2’ to highlight the fact that it covers similar issues to topic 12, but is distinct in that it is considerably more negative, focusing on what Scots might lose following independence, despite the promises being made by pro-independence campaigners. It is strongly correlated with topic 2, about the wealth and prospects of small nations like Norway, and topic 45, which is a set of worries about the prospects of a socialist state post-independence, particularly prominent on the Digital Spy forum.

In short, this two-noded cluster features discussions, mostly in informal sites, that connect economic decisions with the nature and relative affordability of a ‘fairer’, more social-democratic Scotland, contrasted with the austerity and welfare policies pursued by the Conservative-led government in Westminster.

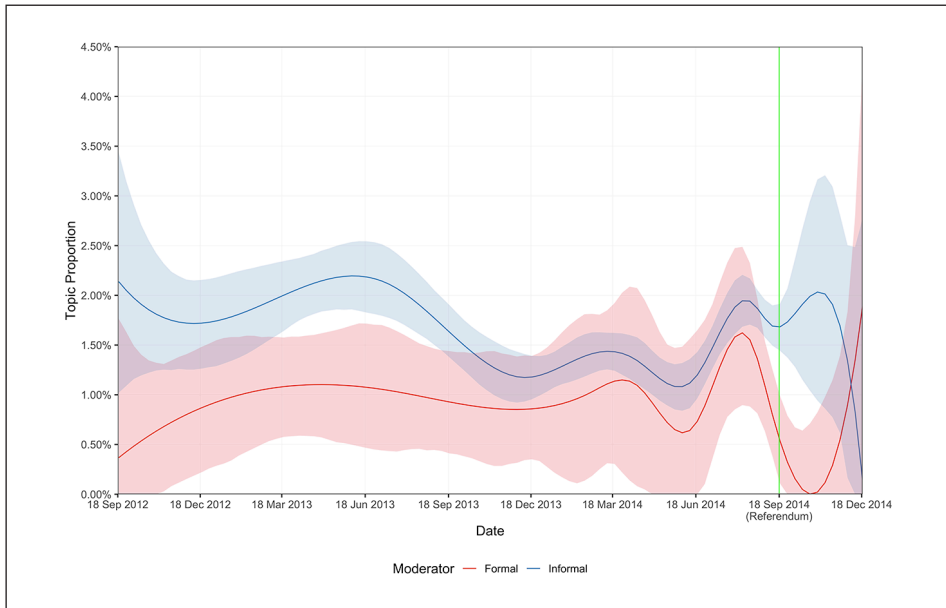


Figure 9. Topic 21, North Sea oil and gas, by formality over time.

This is very different from the discussions of economic matters in formal sites. They too are represented by a cluster with two nodes, numbers 9 and 30. Topic 9 is about gross domestic product (GDP) and spending, featuring in both formal and informal discussion, and being somewhat more important to the No side. It is associated significantly with the more formal topic 14 on fiscal policy, the evenly balanced topic 1 on the general state of the economy, 21 on North Sea oil and gas revenues and, weakly, 31 on taxes, a topic which also appears in the cluster around number 18. The oil and gas topic (Figure 9) is interesting because it is one of the few that starts off largely as an informal topic, gets picked up by the formal sites, but then becomes a more informal concern again after the vote and before the release of the Smith Commission's report.

Topic 30 is an unusual node: it does not make up a particularly high proportion of the topics discussed, being about the regulatory environment. However, it is connected with topic 7 on currency (Figure 10), which features two large spikes in interest, the first of which starts in late 2012 and peaks in February 2013, the second which peaks in early August 2014. Topic 30 also links 32 and 64, which are both about borrowing and the national debt (Figure 11), and while they speak in different terms, both are equally present in formal and informal sites and somewhat more important to the No side than the Yes. It is also associated with topic 69 which, like 14, is about fiscal policy, but much more likely to be found in formal sites than informal.

What is striking about this second cluster is that, while it appears in both formal and informal sites with a slight No-leaning overall, it is dominated by the formal language of economic policy – GDP, revenues, borrowing, regulation and fiscal policy – with little mention of the hope for a fairer, more redistributive society and little grounding in the *experience* of economic policy in the shape of austerity, welfare, health services and so on that was a feature of the first, largely informal cluster. In short, on economic matters,

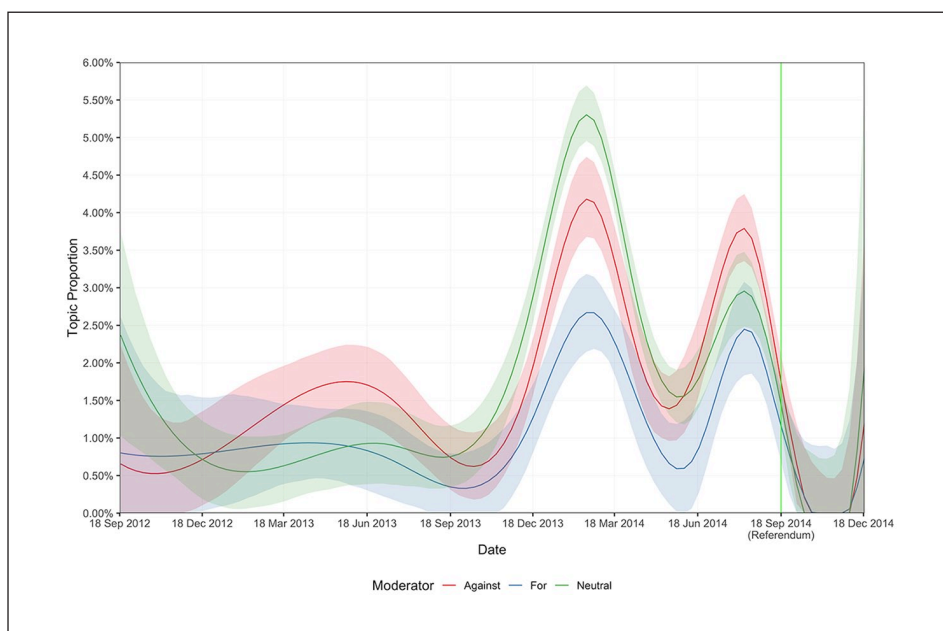


Figure 10. Topic 7, Currency, by leaning over time. Note that the 'neutral' category is a catch-all for sites that were not self-declaredly committed to Yes or No, which includes the forums and a lot of the formal commentary.

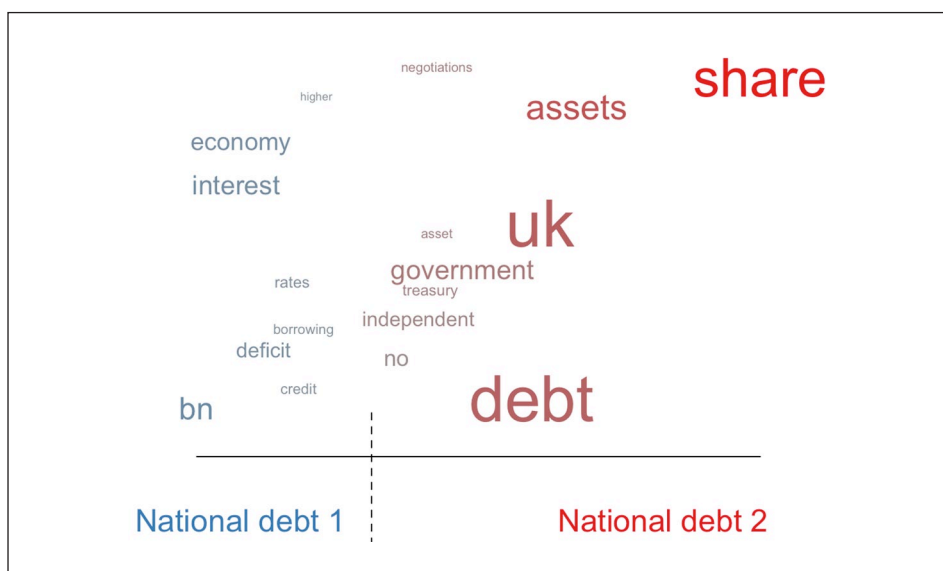


Figure 11. Topics 32 and 64, National Debt 1 and 2, compared. Words closer to the dotted line are more likely to be shared across both topics; further away means they are more exclusive. Font size indicates frequency of occurrence. The word 'bn' is simply an abbreviation for 'billion'.

many in the informal public sphere were picking up and taking cues from the formal public sphere but, with few exceptions, the formal sites were not returning the favour, neither substantively nor linguistically. The people were listening to and using the formal discussion but connected it to real-world experiences; for the most part, elites were not doing the same.

Conclusion

The aim of this article was to demonstrate that developments in electronic social science can reveal theoretically salient features of large-scale deliberative systems that otherwise seem inaccessible, in ways that are grounded in the detail of real-world communication. We did so by posing some questions about the state of the ‘pool of perspectives’ in the Scottish independence debate and applying STM to answer them.

On question 1, Scots talked online about a large number of substantive topics that were far from the ‘abuse’ caricature one finds in many portrayals of the debate. But the single largest set of topics were what we have labelled the meta-conversation, debate about the terms of debate itself. Rather than treating these issues as ‘noise’ to be filtered out, our analysis takes the meta-conversation seriously and as a result has generated direct evidence of citizens holding each other to deliberative standards of respect, evidence and argument in mass democracy.

On questions 2 and 3, we found that, contrary to expectations from our preliminary research, the Yes and No sides were largely talking about the same topics, often in each others’ forums, even though they clearly disagreed about whether the facts of those issues supported a Yes or a No decision. At least at the level of the topics of debate, therefore, citizens included and listened to each others’ perspectives. On this standard, however, the formal discussion fell short: informal sites picked up and discussed the topics that exercised the formal institutions, but the reverse was often not true, especially when it came to the impacts of economic and welfare policy on ordinary lives, on social justice and fairness. Some formal institutions simply failed to speak in the language of the people at all.

On question 4, certain topics rose and fell: voting qualifications started out important but did not sustain attention; EU membership became less of an issue over time; the currency issue spiked twice. While the formal sites remained focused on what the leaders of the main political parties in Westminster were up to, this was much less important to citizens in informal sites, right up to the unveiling of ‘The Vow’ and the subsequent debate about further devolution, a topic taken up by the Smith Commission in late 2014. The SNP and its leadership were more significant throughout the debate, somewhat more to No voters and across the formal/informal divide. But the expectation that a healthy pool of perspectives is one in which all the topics raised in debate were present at the moment of decision was met.

Much more could be said about topics like defence, energy, national symbols, worries about passports and splitting families, imports and prices, and so on, and in future work we will be connecting this more general, high-level description of the thematics and dynamics of the Scottish independence debate with more traditional, detailed, qualitative analysis. But for now, the overall point is that we have empirical tools to draw general conclusions from large, grounded data sets about salient aspects of deliberative systems. In this case, those conclusions are important for deliberative theory and the practice of mass democracy: that ordinary people, given a major constitutional decision to make, can

indeed hold each other to deliberative norms in *mass* public debate, not just in the special conditions of mini-publics or activist-led engagement; that mass debate can indeed capture the full pool of perspectives, making it present at the moment of decision; and that it behoves those in the formal institutions of the public sphere to take those features more seriously, to listen to what is being said and to speak in shared language.

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Supplementary Information

Additional Supplementary Information may be found with the online version of this article.

Notes

1. This point is a bone of contention in deliberative scholarship. Many deliberative scholars accuse some branches of systems theory of abandoning deliberation to the extent that deliberative democracy becomes meaningless, bereft of its signature mode of communication (e.g. Elstub et al., 2016; Owen and Smith, 2015; cf. Stevenson and Dryzek, 2014, for a slightly different line of attack). In return, Bächtiger and Parkinson (2019) argue that the dominant strands of empirical deliberative scholarship have conflated deliberation, democratic deliberation and deliberative democracy, deploying concepts and empirical tools designed for different objects of study, often at inappropriate levels of analysis. Compare Warren (2017) who makes a similar point using different terminology.
2. The vote was held on 18 September 2014. Despite some polls showing a closing gap between the two sides and much greater visibility of the Yes campaign, the result was a 'No' by 55.3% to 44.7% on a high turnout of 84.6% of registered voters.
3. UK referendum law requires there to be two 'lead campaign groups' in any referendum, one for the 'yes' side of a question and one for the 'no', both of which have strict funding limits. For details of the rules as they pertained in 2014, see Electoral Commission (2012).
4. For a discussion of Mumsnet as a public space, see Gamble (2010). Political actors have become more aware of the potential of such spaces: a recent discussion is Pedersen (2020).

5. For example, Keating and McEwen (2017) and McHarg et al. (2016). Exceptions are della Porta et al. (2017) and especially Thiec (2015).
6. For reasons of space, this discussion does not set out every technical detail. The project's ethical protocol and further details of the data search, cleaning and analysis work are available from <https://natconvblog.wordpress.com>.
7. 'The Vow' (*Daily Record*, 15 September 2014), <https://www.dailyrecord.co.uk/news/politics/david-cameron-ed-miliband-nick-4265992>.
8. Using software to collect websites' text and meta-data for subsequent analysis. There are dozens of ways of doing this, in several different programming languages, with many textbooks available, including Munzert et al. (2014).
9. There are important differences between the blogs. *Bella Caledonia* (<http://bellacaledonia.org.uk/>) could be regarded as an alternative newspaper rather than simply a blog, with a large number of writers and contributors and a collective editorial team. *Wings over Scotland* (<https://wingsoverscotland.com/>) had a list of 84 external contributors at the time of data gathering but was much more the creature of its founder and editor, Stuart Campbell, than *Bella Caledonia*. The two unionist blogs, *Lily of Saint Leonards* (<http://effiedeans.blogspot.com>) and *Chokka's Blog* (<http://chokkablog.blogspot.com>) were individual blogs and showed much lower levels of activity and reader interaction than *Bella* or *Wings*.
10. See <https://www.structuraltopicmodel.com> for extensive resources on the method and its application, including a list of publications that use the method. Like other topic modelling tools, Structural Topic Modelling (STM) uses Bayesian probabilistic modelling to derive its word associations. Extensive methodological discussions are Lucas et al. (2017) and Roberts et al. (2014), although we have taken a somewhat light-touch approach along the lines of Farrell (2016) and Hudson (2018). For further details of alternative approaches, their features, strengths and weaknesses, and applications in political science, see Grimmer and Stewart (2013). The data gathering, cleaning and analysis were done in the R Studio environment (www.rstudio.com), aided by a web-based data visualisation tool called Stminsights (<https://cran.r-project.org/web/packages/stminsights/vignettes/intro.html>).

References

- Bächtiger A and Parkinson J (2019) *Mapping and Measuring Deliberation: Towards a New Deliberative Quality*. Oxford: Oxford University Press.
- Baker P, Gabrielatos C, Khosravini M, et al. (2008) A Useful Methodological Synergy? Combining Critical Discourse Analysis and Corpus Linguistics to Examine Discourses of Refugees and Asylum Seekers in the UK Press. *Discourse & Society* 19 (3): 273–306.
- Bennie L and McAngus C (2020) The Scottish National Party. In Keating M (ed.) *The Oxford Handbook of Scottish Politics*. Oxford: Oxford University Press, pp.278–300.
- Berg BL (2001) *Qualitative Research Methods for the Social Sciences*. Boston, MA: Allyn & Bacon.
- Bohman J (2012) Representation in the Deliberative System. In: Parkinson J and Mansbridge J (eds) *Deliberative Systems: Deliberative Democracy at the Large Scale*. Cambridge: Cambridge University Press, pp.72–94.
- Boswell J, Hendriks C and Ercan S (2016) Message Received? Examining Transmission in Deliberative Systems. *Critical Policy Studies* 10 (3): 263–283.
- Chambers S (2003) Deliberative Democratic Theory. *Annual Review of Political Science* 18 (6): 307–326.
- Cinalli M and O'Flynn I (2014) Public Deliberation, Network Analysis and the Political Integration of Muslims in Britain. *The British Journal of Politics and International Relations* 16 (3): 428–451.
- Curato N, Hammond M and Min J (2019) *Power in Deliberative Democracy*. New York: Palgrave.
- della Porta D, O'Connor F, Portos M, et al. (2017) *Social Movements and Referendums from below: Direct Democracy in the Neoliberal Crisis*. Bristol: Policy Press.
- Devine TM (2008) *Scotland and the Union, 1707–2007*. Edinburgh: Edinburgh University Press.
- Dryzek J (2009) Democratization and Deliberative Capacity Building. *Comparative Political Studies* 42 (11): 1379–1402.
- Dryzek J (2010) *Foundations and Frontiers of Deliberative Governance*. Oxford: Oxford University Press.
- Electoral Commission (2012) *Introduction to Referendum Campaigning*. London: The Electoral Commission.
- Elster J (1986) The Market and the Forum: Three Varieties of Political Theory. In: Elster J and Hylland A (eds) *Foundations of Social Choice Theory*. Cambridge: Cambridge University Press, pp.103–132.
- Elstub S, Ercan S and Mendonça RF (2016) Editorial Introduction: The Fourth Generation of Deliberative Democracy. *Critical Policy Studies* 10 (2): 139–151.
- Fairclough N (2003) *Analysing Discourse: Textual Analysis for Social Research*. London: Routledge.

- Farrell J (2016) Corporate Funding and Ideological Polarization about Climate Change. *Proceedings of the National Academy of Sciences* 113 (1): 92–97.
- Fleuß D, Helbig K and Schaal GS (2018) Four Parameters for Measuring Democratic Deliberation: Theoretical and Methodological Challenges and How to Respond. *Politics and Governance* 6 (1): 11.
- Florida A (2018) The Origins of the Deliberative Turn. In: Bächtiger A, Dryzek J, and Mansbridge J, et al. (eds) *The Oxford Handbook of Deliberative Democracy*. Oxford: Oxford University Press pp.35–54.
- Gallent N and Wong C (2009) Introduction: Place Shaping, Spatial Planning and Liveability. *The Town Planning Review* 80 (4/5): 353–358.
- Gamble R (2010) Going Public? Articulations of the Personal and Political on Mumsnet.com. In: Mahony N, Newman J and Barnett C (eds) *Rethinking the Public: Innovations in Research, Theory and Politics*. Bristol: Policy Press, pp.29–42.
- Gibson R and Cantijoch M (2013) Conceptualizing and Measuring Participation in the Age of the Internet: Is Online Political Engagement Really Different to Offline? *The Journal of Politics* 75 (3): 701–716.
- Grimmer J and Stewart BM (2013) Text as Data: The Promise and Pitfalls of Automatic Content Analysis Methods for Political Texts. *Political Analysis* 21 (3): 267–297.
- Gutmann A and Thompson D (1996) *Democracy and Disagreement*. Cambridge, MA: Belknap Press of Harvard University Press.
- Habermas J (1996) *Between Facts and Norms: Contributions to a Discourse Theory of Law and Democracy* (trans. W Rehg). Cambridge: Polity Press.
- Hassan G (2014) *Independence of the Scottish Mind: Elite Narratives, Public Spaces and the Making of a Modern Nation*. Basingstoke: Palgrave.
- Hendriks C (2006) Integrated Deliberation: Reconciling Civil Society's Dual Role in Deliberative Democracy. *Political Studies* 54 (3): 486–508.
- Hendriks C (2016) Coupling Citizens and Elites in Deliberative Systems: The Role of Institutional Design. *European Journal of Political Research* 55 (1): 43–60.
- Holdo M (2020) Meta-Deliberation: Everyday Acts of Critical Reflection in Deliberative Systems. *Politics* 40 (1): 106–119.
- Hudson A (2018) When Does Public Participation Make a Difference? Evidence From Iceland's Crowdsourced Constitution. *Policy & Internet* 10 (2): 185–217.
- Keating M and McEwen N (2017) The Scottish Independence Debate. In: Keating M (ed.) *Debating Scotland*. Oxford: Oxford University Press, pp.1–26.
- Langer AI, Comerford M and McNulty D (2019) Online Allies and Tricky Freelancers: Understanding the Differences in the Role of Social Media in the Campaigns for the Scottish Independence Referendum. *Political Studies* 67 (4): 834–854.
- Law A (2014) Mediating the Scottish Independence Debate. *Media Education Journal* 56: 3–7.
- Levy R, Kong H, Orr G, et al. (eds) (2018) *The Cambridge Handbook of Deliberative Constitutionalism*. Cambridge: Cambridge University Press.
- Lucas C, Nielsen RA, Roberts ME, et al. (2017) Computer-Assisted Text Analysis for Comparative Politics. *Political Analysis* 23 (2): 254–277.
- McAngus C and Rummery K (2018) Campaigning for the Female Vote in the Scottish Independence Referendum: Comparing Women for Independence and Women Together. *Scottish Affairs* 27 (2): 145–168.
- McHarg A, Mullen T, Page A, et al. (2016) *The Scottish Independence Referendum: Constitutional and Political Implications*. Oxford: Oxford University Press.
- Mansbridge J (1999) Everyday Talk in the Deliberative System. In: Macedo S (ed.) *Deliberative Politics: Essays on 'Democracy and Disagreement'*. New York: Oxford University Press, pp.211–239.
- Minozzi W, Song H, Lazer DMJ, et al. (2020) The Incidental Pundit: Who Talks Politics with Whom, and Why? *American Journal of Political Science* 64 (1): 135–151.
- Mullen T (2016) Introduction. In: McHarg A, Mullen T, Page A, et al. (eds) *The Scottish Independence Referendum*. Oxford: Oxford University Press pp.1–27.
- Munzert S, Rubba C, Meißner P, et al. (2014) *Automated Data Collection with R: A Practical Guide to Web Scraping and Text Mining*. New York: Wiley.
- Neblo M (2015) *Deliberative Democracy between Theory and Practice*. New York: Cambridge University Press.
- Owen D and Smith G (2015) Survey Article: Deliberation, Democracy, and the Systemic Turn. *Journal of Political Philosophy* 23 (2): 213–234.
- Parkinson J (2012) Democratizing Deliberative Systems. In: Parkinson J and Mansbridge J (eds) *Deliberative Systems*. Cambridge: Cambridge University Press, pp.151–172.

- Parkinson J (2018) Deliberative Systems. In: Bächtiger A, Dryzek J, Mansbridge J, et al. (eds) *The Oxford Handbook of Deliberative Democracy*. Oxford: Oxford University Press, pp.432–446.
- Parkinson J and Mansbridge J (eds) (2012) *Deliberative Systems: Deliberative Democracy at the Large Scale*. Cambridge: Cambridge University Press.
- Pedersen S (2020) *The Politicization of Mumsnet*. Bingley: Emerald.
- Quinlan S, Shephard M and Paterson L (2015) Online Discussion and the 2014 Scottish Independence Referendum: Flaming Keyboards or Forums for Deliberation? *Electoral Studies* 38: 192–205.
- Roberts ME, Stewart BM, Tingley D, et al. (2014) Structural Topic Models for Open-Ended Survey Responses. *American Journal of Political Science* 58 (4): 1064–1082.
- Rothschild JE, Howat AJ, Shafranek RM, et al. (2019) Pigeonholing Partisans: Stereotypes of Party Supporters and Partisan Polarization. *Political Behavior* 41: 423–443.
- Scottish Government (2007) *Choosing Scotland's Future: A National Conversation: Independence and Responsibility in the Modern World*. Edinburgh: Scottish Government.
- Smith Commission (2014) *Report of the Smith Commission for Further Devolution of Powers to the Scottish Parliament*, 27 November. Edinburgh: The Smith Commission.
- Stevenson H and Dryzek J (2012) The Discursive Democratization of Global Climate Governance. *Environmental Politics* 21: 189–210.
- Stevenson H and Dryzek J (2014) *Democratizing Global Climate Governance*. Cambridge: Cambridge University Press.
- Street J (2001) *Mass Media, Politics and Democracy*. Basingstoke: Palgrave.
- Suiter J and Reuchamps M (eds) (2016) *Constitutional Deliberative Democracy in Europe*. Colchester: ECPR Press.
- Thiec A (2015) ‘Yes Scotland’: More Than a Party Political Campaign, a National Movement Fostering a New Active Citizenship. *Revue Française de civilisation britannique* 20 (2). Available at <http://journals.openedition.org/rfcb/401>
- Warren M (2017) When, Where and Why Do We Need Deliberation, Voting, and Other Means of Organizing Democracy? A Problem-Based Approach to Democratic Systems. *American Political Science Review* 111 (1): 39–53.
- Whatley C (2014) *The Scots and the Union: Then and Now*, 2nd edn. Edinburgh: Edinburgh University Press.
- Wojcieszak ME and Mutz DC (2009) Online Groups and Political Discourse: Do Online Discussion Spaces Facilitate Exposure to Political Disagreement? *Journal of Communication* 59 (1): 40–56.
- Wright S and Street J (2007) Democracy, Deliberation and Design: The Case of Online Discussion Forums. *New Media & Society* 9 (5): 849–869.

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